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AUTHOR Renfrow, Raylene; Henderson, David L.
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ABSTRACT

This study presents the results of a 1989 study of computers in Texas schools. Data were gathered from 65 questionnaires concerning brands currently in use, percent of computer literacy among faculty, number of computer laboratories in the school district, use of computer networking in the laboratories, and brands of computers by grade level. It was found that: (1) the number of computers per district has increased in the past four years; (2) Apple computers were preferred at all grade levels in those school districts having a contract with Apple Computers; (3) there are eight computer laboratories per district on average; (4) less than 25% of the laboratories are networked; and (5) about half of the teachers are computer literate. (11 references) (DB)

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COMPUTERS IN SCHOOLS OF SOUTHEAST TEXAS - 1989

By

Raylene Renfrow
Education Service Center VI
Huntsville, Texas

David L. Henderson
Sam Houston State University
Huntsville, Texas

May 1989

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Purpose of the Study

During the decade, computers in schools have become a complex and controversial topic while placing new demands on educators. If the potential of educational computing goes unrealized, educators will inevitably be criticized for failing to prepare students for the future. Lezotte's (1980) "Effective Schools" says educators must change the curriculum as the country moves out of the Industrial Age into the Information Age. High school graduates in the 1990's will be expected to be proficient at processing information and solving problems by utilizing modern equipment. Acceptance of this emerging technology is gratifying, but the technology itself is costly.

"Computer use in education has not resulted in the benefits that have been expected. A major cause for the lack of effect may be attitude, apparently held by many teachers, administrators and parents, that the computer contains some magical quality requiring only proximity to students for significant learning to take place. The magic is in the teacher, not the computer." (Lounge and Walker, 1988, p. 32). A significantly positive impact of computer technology in education will not be realized until a significant number of educators have personal access to computers.

The next few years are going to be crucial for the future of education and educational computing. Their combined fate depends to a large extent on careful planning. Purchase decisions have to be made with care as schools face monetary restrictions. Decisions have to be made as to how many computers will be bought, which brand should be selected, and how the school will manage to pay for the privilege of using them (Young, 1988, p. 12).

The purpose of this study was to provide educators with the data necessary to make a knowledgeable decision in relation to the purchase of computer hardware for education. Data was gathered concerning brands presently in use, percent of computer literacy among faculty, number of computer labs in the school district, use of networking in labs, and brands of computers by grade level.

Review of the Literature

The United States is rapidly becoming a computer-dependent society as computers are proliferating and impacting every aspect of the nation's life. Development and use of microcomputers (personal computers or PC's) have spurred increased interest in the use of

technology to improve educational quality and access throughout the nation. It is estimated that the number of PC's in elementary and secondary schools is tripling every eighteen months (Grayson, 1984). Applications used on the computer are shown in Figure 1 (Computer Software News, 1989, p. 16).

*** insert Figure 1 here ***

The number of computers in the schools was reported by 25 states in a study by Bruder (1988, p. 42). The totals for computers were Apple (347,024); IBM (70,950); Tandy (81,758); Commodore (48,191); PC Clones (6,505); and others (49,012) (Bruder, 1988, p. 42).

The big hurdle for MS-DOS users is the installed base of Apple compatible software. Commodore is trying to make a comeback in the MS-DOS line for its new machines. Tandy is providing Tandy 1000's with TRACKSTAR (a board that allows the Tandy to run many Apple based software). Networking is being looked at by larger schools and is in demand especially on the IBM. Geoff Fletcher of the Texas Education Agency points out that part of the reason some educators in Texas have been doing solutions-based hardware purchasing "is that vendors like Tandy, Apple, and IBM have been talking up solutions-based; as opposed to promoting standalone computer purchases." The list of hardware vendors is realistically now "Tandy, Apple, and IBM." (McCarthy, 1989, pp. 29)

In the 1988-89 school year, a survey of 35 of the 50 largest school districts in the country showed the market with Apple (60%) and MS-DOS machines (30%). Purchase plans for the 1988-89 year showed Apple (70%), IBM (15%) and Tandy (15%) (McCarthy, 1989).

In a study (1675 of 2105 questionnaires returned for 80 percent) of computers in schools in a southeast Texas suburban school district, the teachers indicated the following:

1. 83% were female teachers
2. 37% own a computer
3. 58% use the computer at school
4. 79% have access to a computer for instruction purposes
5. 77% consider themselves a computer beginner
6. 28% feel comfortable with computer knowledge
7. 92% feel the computer is a valuable tool for education
8. 73% indicated there was not enough hardware
9. 38% said they were afraid of the computer (Lusk, 1989).

Within the next five years, educators will look for ways to integrate micros into the school curriculum because of mandates such as those from the 1984 Texas Legislature related to computer literacy in the junior high school and the TEA mandated "Long Range Plan for Technology". The focus of elementary schools computer use will change in 1989 to include keyboarding skills as specified in the Long Range Plan. The essential elements of the junior high school computer literacy course are up for changes. It is anticipated that the focus will be from programming to application. The call for textbooks for the computer course ask that the publishers address the course technologically with software data disks and tests in the ASCII format for two operating systems. The State of Texas in its plans entitled "1988-2000 Long Range Plan for Technology of the Texas State Board of Education" is divided into three phases and requests $16.5 M for the initial phases for 1989-1992. The goals:

1. Have technology distributed equitably throughout Texas schools.
2. By the year 2000 include a statewide integrated telecommunications system
3. Minimum characteristics of teachers, students, and administrator workstations and improving the staff-student/ computer ratio. (Goodspeed, 1989, p. 14)

Methods and Procedures

The population of this study included the 111 school districts in Education Service Center Regions IV and VI. These centers serve twenty-two counties of Southeast Texas in the Houston area. Sixty-five questionnaires were returned from 111 school districts giving a return rate of 59 percent.

A total of 13,114 computers were reported in use by the 65 districts with a mean of 202 computers per district in 1989 up from 86 computers in 1985. The brands of computers were reported: Apple, Commodore, IBM, Radio Shack, Laser, AT & T, Macintosh, Hewlett Packard, Wicat, Sperry-Rand, Texas Instrument, and clones. Of the 13,114 total computers, 8492 (65%) were **Apple**; 1605 (12%) were **Commodore**; 974 (7%) were **clones;** 794 (6%) were **IBM**; 603 (5%) were **Radio Shack**; and 647 (5%) were other brands (see Figure 2).

*** insert Figure 2 here ***

Brands of Computers in SE Texas During 1985 and 1989

In comparing the number of computers by grade level, it was found that there were 5254 of the 13,114 computers (40%) at the elementary level; 3737 computers (29%) at the junior high

school level; and 4123 (31%) at the high school level. This compares with 36 percent in elementary school, 36 percent in junior high school, and 31 percent in high school in 1985 (Renfrow and Henderson, 1986). See Table 1 for computers brands by school levels. Table 2 shows the other brands of computers and percentage found in schools. There were 64 "other" brands listed.

*** insert Table 1 here ***

Brands of Computers in SE Texas per Schools - 1989

*** insert Table 2 ***

Other Brands of Computers in SE Texas - 1989

The estimated computer literacy rate for teachers in a district was 48 percent with a range of 10 percent to 97 percent. The mean number of computer labs in a school district was 8.0 labs with a range of 1 to 65. Fifteen of the 65 school district (23.1%) indicated that they had their computer labs networked.

Conclusions

From the results of the study, several general conclusions can be made. First, it was apparent that Apple Computers were preferred at all grade levels in the school districts serviced by Education Service Centers Region IV and VI. The bidding arrangement for Apple Computers through Education Service Center Region IV starting in 1981 and the present Apple State Contract make Apple the educational computer of choice. Most computer vendors now offer a similar 40 percent discount from list price. About half of the teachers are computer literate, there are eight computer labs per district on the average, and less than 25 percent of the labs are networked.

New questions deserve answering. Is one brand of computer better suited for the required Texas junior high computer literacy course? Is one brand of computer better for higher level programming and computer science courses? Is one brand of computer best for computer assisted instruction? Do Education Service Centers tip the scale in favor of one particular brand of computer? Is there value in having the same brand of computers throughout the district or is exposure to a variety of brand preferred?

The status of microcomputers in education changes very rapidly. In addition, the computer market itself changes constantly and unpredictably. Because of the changes, continual research in the field of educational computing is needed.

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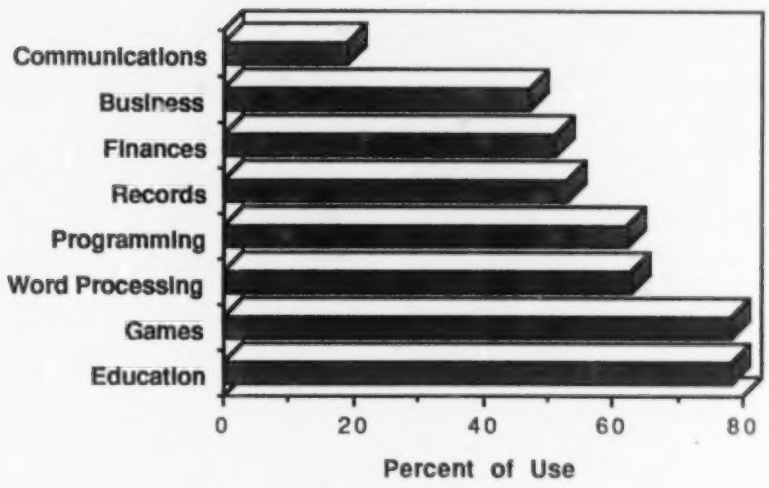

Figure 1
Computer Applications and Use in 1988

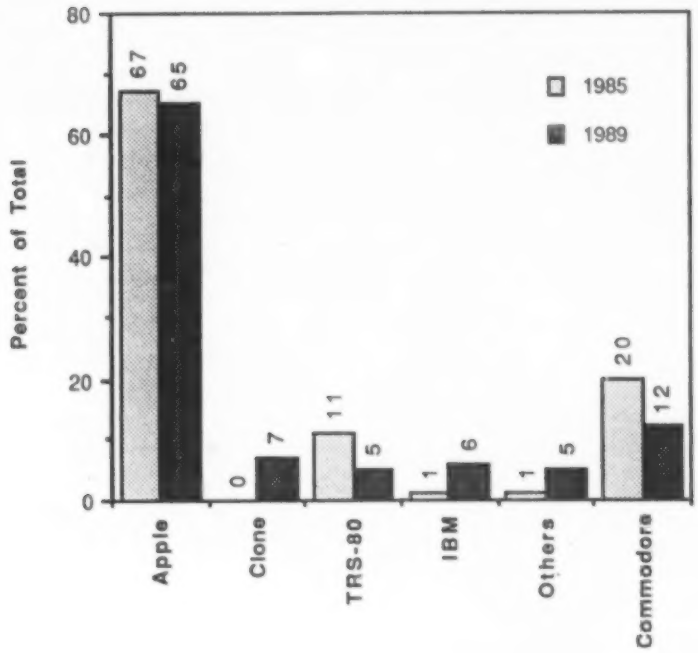

Figure 2
Brands of Computers in SE Texas in 1985 1st 1989

Table 1

Brands of Computers in SE Texas per Schools - 1989

Brand	Frequency	Percentage
Elementary School Total = 5254		
Apple	3272	62.3%
IBM	257	4.9%
Clone	323	6.1%
Commodore	967	18.4%
TRS-80	127	2.4%
Others	308	5.9%
Junior High School Total = 3737		
Apple	2780	74.4%
IBM	106	2.8%
Clone	52	1.4%
Commodore	598	16.0%
TRS-80	176	4.7%
Others	25	0.7%
High School Total = 4123		
Apple	2440	59.2%
IBM	431	10.5%
Clone	599	14.5%
Commodore	40	0.9%
TRS-80	299	7.3%
Others	314	7.6%
TOTAL COMPUTERS = 13,114		

Table 2

Other Brands of Computers in SE Texas - 1989

Brand	Frequency	Percentage
Wicat	257	39.8%
Macintosh	141	21.9%
Tandy	62	9.6%
Hewlett Packard	47	7.3%
Various	40	6.2%
Laser	37	5.7%
AT&T	30	4.7%
Sperry-Rand	16	2.5%
Texas Instruments	15	2.3%
TOTAL COMPUTERS	645	